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APPLICATION NO.	FILING DATE	FIRST NAMED INVENTOR	ATTORNEY DOCKET NO.	CONFIRMATION NO.
10/687,541	10/16/2003	David A. Morgenstern	MTC 6888.2 (39-21 (52925)	7748
321	7590	06/14/2007	EXAMINER	
SENNIGER POWERS ONE METROPOLITAN SQUARE 16TH FLOOR ST LOUIS, MO 63102			ECHELMEYER, ALIX ELIZABETH	
			ART UNIT	PAPER NUMBER
			1745	
			NOTIFICATION DATE	DELIVERY MODE
			06/14/2007	ELECTRONIC

Please find below and/or attached an Office communication concerning this application or proceeding.

The time period for reply, if any, is set in the attached communication.

Notice of the Office communication was sent electronically on above-indicated "Notification Date" to the following e-mail address(es):

uspatents@senniger.com

Office Action Summary

Application No.

10/687,541

Applicant(s)

MORGENSTERN, DAVID A.

Examiner

Alix Elizabeth Echelmeyer

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-- The MAILING DATE of this communication appears on the cover sheet with the correspondence address --

Period for Reply

A SHORTENED STATUTORY PERIOD FOR REPLY IS SET TO EXPIRE 3 MONTH(S) OR THIRTY (30) DAYS, WHICHEVER IS LONGER, FROM THE MAILING DATE OF THIS COMMUNICATION.

- Extensions of time may be available under the provisions of 37 CFR 1.136(a). In no event, however, may a reply be timely filed after SIX (6) MONTHS from the mailing date of this communication.
- If NO period for reply is specified above, the maximum statutory period will apply and will expire SIX (6) MONTHS from the mailing date of this communication.
- Failure to reply within the set or extended period for reply will, by statute, cause the application to become ABANDONED (35 U.S.C. § 133). Any reply received by the Office later than three months after the mailing date of this communication, even if timely filed, may reduce any earned patent term adjustment. See 37 CFR 1.704(b).

Status

- 1) ☒ Responsive to communication(s) filed on 04 April 2007.
- 2a) ☐ This action is **FINAL**. 2b) ☒ This action is non-final.
- 3) ☐ Since this application is in condition for allowance except for formal matters, prosecution as to the merits is closed in accordance with the practice under *Ex parte Quayle*, 1935 C.D. 11, 453 O.G. 213.

Disposition of Claims

- 4) ☒ Claim(s) 1-52, 88-108 and 117-130 is/are pending in the application.
- 4a) Of the above claim(s) 53-87 and 109-116 is/are withdrawn from consideration.
- 5) ☐ Claim(s) _____ is/are allowed.
- 6) ☒ Claim(s) 1-52, 88-108 and 117-¹³⁰~~130~~ is/are rejected.
- 7) ☐ Claim(s) _____ is/are objected to.
- 8) ☐ Claim(s) _____ are subject to restriction and/or election requirement.

Application Papers

- 9) ☐ The specification is objected to by the Examiner.
- 10) ☐ The drawing(s) filed on _____ is/are: a) ☐ accepted or b) ☐ objected to by the Examiner.
Applicant may not request that any objection to the drawing(s) be held in abeyance. See 37 CFR 1.85(a).
Replacement drawing sheet(s) including the correction is required if the drawing(s) is objected to. See 37 CFR 1.121(d).
- 11) ☐ The oath or declaration is objected to by the Examiner. Note the attached Office Action or form PTO-152.

Priority under 35 U.S.C. § 119

- 12) ☐ Acknowledgment is made of a claim for foreign priority under 35 U.S.C. § 119(a)-(d) or (f).
- a) ☐ All b) ☐ Some * c) ☐ None of:
- ☐ Certified copies of the priority documents have been received.
 - ☐ Certified copies of the priority documents have been received in Application No. _____.
 - ☐ Copies of the certified copies of the priority documents have been received in this National Stage application from the International Bureau (PCT Rule 17.2(a)).

* See the attached detailed Office action for a list of the certified copies not received.

Attachment(s)

- 1) ☒ Notice of References Cited (PTO-892)
- 2) ☐ Notice of Draftsperson's Patent Drawing Review (PTO-948)
- 3) ☐ Information Disclosure Statement(s) (PTO/SB/08)
Paper No(s)/Mail Date _____
- 4) ☐ Interview Summary (PTO-413)
Paper No(s)/Mail Date. _____
- 5) ☐ Notice of Informal Patent Application
- 6) ☐ Other: _____

DETAILED ACTION

Election/Restrictions

1. Claims 53-87 and 109-116 are withdrawn from further consideration pursuant to 37 CFR 1.142(b) as being drawn to a nonelected group, there being no allowable generic or linking claim. Election was made **without** traverse in the reply filed on April 4, 2007.
2. In the Election of Species requirement, Applicants elected nickel as the base metal material.
3. Claims 1-52, 88-108 and 117-130 are pending and are rejected for the reasons given below.

Claim Interpretation

4. The product-by-process limitations of claims 1, 4-6, 9-11, 33-35, 39-41, 88-90, 101, 106-108, 117-119 and 127 are not given patentable weight since the courts have held that patentability is based on a product itself, even if the prior art product is made by a different process (see In re Thorpe, 227 USPQ 964, (CAFC 1985), In re Brown, 173 USPQ 685 (CCPA 1972), and In re Marosi, 218 USPQ 289, 292-293 (CAFC 1983)).

Claims 1, 88-90, 101, 106-108, 117-119 and 127 are drawn to methods for forming the catalyst. While the claims are process claims, the process of those claims is

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that of reforming a feed gas to produce hydrogen, and not the process of forming the catalyst.

Additionally, claims 4-6, 9-11, 33-35 and 39-41 are drawn to the method by which the surface area is measured, specifically the Brunauer-Emmett-Teller method. That method is not given patentable weight since the surface area limitations are met.

Claim Rejections - 35 USC § 103

5. The following is a quotation of 35 U.S.C. 103(a) which forms the basis for all obviousness rejections set forth in this Office action:

(a) A patent may not be obtained though the invention is not identically disclosed or described as set forth in section 102 of this title, if the differences between the subject matter sought to be patented and the prior art are such that the subject matter as a whole would have been obvious at the time the invention was made to a person having ordinary skill in the art to which said subject matter pertains. Patentability shall not be negated by the manner in which the invention was made.

6. Claims 1-52, 88-108 and 117-130 are rejected under 35 U.S.C. 103(a) as being unpatentable over Marino et al. (Hydrogen from Steam Reforming of Ethanol) in view of Sargent (US Patent 2,892,801).

Marino et al. teach a catalyst made of copper on the surface of a porous alumina substrate (abstract; p. 1095 2nd column).

Regarding claims 2, 20, 94 121 and 122, the catalyst is used to reform ethanol to produce hydrogen (Introduction).

As for claims 3, 21, 32 and 50, Marino et al. teach that the hydrogen produced may be used in a fuel cell. It would have been obvious to one having ordinary skill in the

art to provide hydrogen and oxygen to a fuel cell, since both components are needed for the fuel cell to produce electricity.

With regard to claims 4-6, 9-11, 33-35 and 39-41, Marino et al. teach that the surface area of copper in the catalyst may be $98.80 \text{ m}^2/\text{g}$ (Table 4. p. 1099). It is the position of the examiner that 98.80 is about 80. As for the method by which the surface area is measured, as discussed above, the method by which the surface area is measured is not given patentable weight since the surface area limitations are met.

As for claims 22-24, 28 and 123, Marino et al. teach that the reaction is carried out at 300°C (p. 1096 column 1).

Regarding claims 1, 12, 25-27, 38, 42, 51, 52, 88-93, 101-108 and 117-120, and 127-130, Marino et al. fail to teach that the substrate is a metal, specifically nickel. Marino et al. do teach that the presence of nickel is desirable in the catalyst, since the presence of nickel tends to ensure that copper will stay on the surface of the substrate (p. 1097 2nd column) and that the addition helps to maximize hydrogen production (p. 1-99 1st column).

Sargent teaches a catalyst made of a copper-plated nickel sponge (column 1 lines 40-44). Sargent further teaches that the catalyst may be used in dehydrogenation (column 4 lines 44-47).

As for claims 7, 8, 15, 16, 36, 37, 45 and 46, Sargent teaches that the final catalyst may be from 0.5 percent to 75 percent by weight copper (column 2 lines 21-24). Specific examples 5 and 6 on columns 3 and 4 teach that the catalyst may be as much as 27.0 or 44.4 percent by weight copper.

Regarding claims 13, 14, 43 and 44, Example 1 of Sargent teaches a catalyst of 9.5 percent by weight copper (column 3). This would yield a catalyst of 90.5 percent by weight nickel.

As for claims 95, 98 and 124, since the catalyst, reactant, and temperature are the same as in the presently claimed invention, the reaction would inherently produce methane.

Regarding claims 96, 97, 99, 100, 125 and 126 it is well known to run internal combustion engines on gaseous fuels such as methane and hydrogen (see, for example, US Patent 5,398,663 column 1 lines 20-24).

With regard to claims 17-19 and 47-49, since the catalyst structure, including the amount and surface area of the components, is identical to the presently claimed invention, the amount of nickel at the surface of the catalyst would inherently be the same in the combination of Marino et al. and Sargent as in the instantly claimed invention.

With regard to claims 29-31, since the catalyst structure, including the amount and surface area of the components, is identical to the presently claimed invention, the thermal conductivity of the catalyst would inherently be the same in the combination of Marino et al. and Sargent as in the instantly claimed invention.

It would be desirable to use the copper plated nickel sponge of Sargent as the catalyst in the reaction of Marino et al. since Marino et al. teach that the presence of nickel improves the performance of a copper catalyst.

Therefore, it would have been obvious to one having ordinary skill in the art at the time the invention was made to use the copper plated nickel sponge of Sargent as the catalyst in the reaction of Marino et al. since Marino et al. teach that the presence of nickel improves the performance of a copper catalyst.

Response to Arguments

7. Applicant's arguments, see Remarks, filed December 7, 2006, with respect to the rejections of claims have been fully considered and are persuasive. Therefore, the rejection has been withdrawn. However, upon further consideration, a new ground of rejection is made, see above.

Conclusion

Any inquiry concerning this communication or earlier communications from the examiner should be directed to Alix Elizabeth Echelmeyer whose telephone number is 571-272-1101. The examiner can normally be reached on Mon-Fri 7-4:30.

If attempts to reach the examiner by telephone are unsuccessful, the examiner's trainer, Susy N. Tsang-Foster can be reached on 571-272-1293. The fax phone number for the organization where this application or proceeding is assigned is 571-273-8300.

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Information regarding the status of an application may be obtained from the Patent Application Information Retrieval (PAIR) system. Status information for published applications may be obtained from either Private PAIR or Public PAIR. Status information for unpublished applications is available through Private PAIR only. For more information about the PAIR system, see <http://pair-direct.uspto.gov>. Should you have questions on access to the Private PAIR system, contact the Electronic Business Center (EBC) at 866-217-9197 (toll-free). If you would like assistance from a USPTO Customer Service Representative or access to the automated information system, call 800-786-9199 (IN USA OR CANADA) or 571-272-1000.

Alix Elizabeth Echelmeyer
Examiner
Art Unit 1745

aee

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Susy Tsang-Foster
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